Revised 8/16/99

INDIANA DEPARTMENT OF TRANSPORTATION
MATERIALS AND TESTS DIVISION

PCCP CORE LENGTH DETERMINATION
ITM No. 404-99T

1.0 SCOPE

1.1 This test method covers the determination of PCCP core lengths.

1.2 The values stated in either SI metric or acceptable English units are to be regarded separately as standard, as appropriate for a specification with which this ITM is used. Within the text, English units are shown in parenthesis. The values stated in each system may not be exact equivalents; therefore each system shall be used independently of the other, without combining values in any way.

1.3 This ITM may involve hazardous materials, operations, and equipment. This ITM does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this ITM to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

REFERENCED DOCUMENTS

2.1 AASHTO Standards
T 24 Obtaining and Testing Drilled Cores and Sawed Beams of Concrete

3.0 TERMINOLOGY

3.1 Terms and Abbreviations. Definitions for terms and abbreviations shall be in accordance with the Department’s Standard Specifications, Section 101.

4.0 SIGNIFICANCE AND USE

4.1 This ITM is used to determine the length of PCCP cores used for calculating the thickness of PCCP.

5.0 APPARATUS

5.1 The apparatus will be furnished by the Department. The apparatus consists of a carriage, five drop scales, a vertical shaft, a standard manufactured rule, and a base as shown in Figure 1. The apparatus will be capable of measuring cores ranging in length from 100 mm (4 in.) to 500 mm (20 in.).

The carriage will consist of two steel plates held parallel to each other. The two steel plates have holes drilled inline to hold five drop scales perpendicular to the steel plates. One hole will be in the center of the plate and the center of the other four holes is 33.7 mm (1.3 in.) from the center of the plate. A lift plate allows the operator to lift all five drop scales simultaneously.

The five drop scales are of No. 10 (No. 3) diameter steel approximately 200 mm (8 in.) in length. Each drop scale is scored at 2.5 mm (0.1 in.) intervals, with varying paint colors inlaid to assist in clarity of measurement. Each drop scale has metal conical tips at the lower ends. The upper ends of the drop scales are held in place with hex nuts, which prevent the scales from falling through the carriage while not in use.

The vertical shaft is constructed of steel tubing.

A standard steel rule with both metric and English units is attached to the vertical shaft. Pointers attached to the carriage indicate the length of the core based on the attached rule.

The base consists of a metal plate mounted to the vertical shaft. The base is equipped with an open vice to ensure that the core is centered during measuring. The base should be large enough to support the core and balance the mass of the carriage, the drop scales, the vertical shaft, and the rule.

6.0 SAMPLING

6.1 Sampling shall be accomplished in accordance with AASHTO T 24.

7.0 TEST SPECIMEN

7.1 The PCCP cores shall be 100 mm (4 in.) in diameter and free of slurry or debris.

7.2 Cores that show abnormal defects or that have been damaged appreciably during drilling operations will not be used. Cores that crack during drilling operations that can be reassembled without detection of the crack and remain adhered independently during measurement may be used.

7.3 A core drilled from PCCP may include aggregate particles bonded to the bottom surface. Particles not substantially surrounded by mortar will be removed with a rock hammer. Care will be taken not to damage the core. The core will not be used if damage occurs during aggregate removal.

8.0 PROCEDURE

8.1 Set the carriage along the vertical shaft, at the depth of the core, to the nearest 25 mm (1.0 in.). Raise the carriage so that the drop scales are suspended above the core. Center the core under the carriage with the finished end at the base of the apparatus.

8.2 Lower the carriage so that the drop scales rest on the unfinished end of the specimen. Determine the length of the core at each drop scale location to the nearest 2.5 mm (0.1 in.). Record the five readings on form TD 244.

8.3 Repeat 8.1 and rotate the specimen 45 degrees about its principal axis. Repeat 8.2.

9.0 CALCULATIONS

9.1 Calculate the average of the 10 readings and report the average as the core length.

$$L = (R_1+R_2+R_3+R_4+R_5+R_6+R_7+R_8+R_9+R_{10})/10$$

Where:

L = Average Core Length
R = Core Length at Individual Measurement

9.2 Report average core length on form TD 244.

11.0 PRECISION

11.1 The precision of this test method has not been determined.

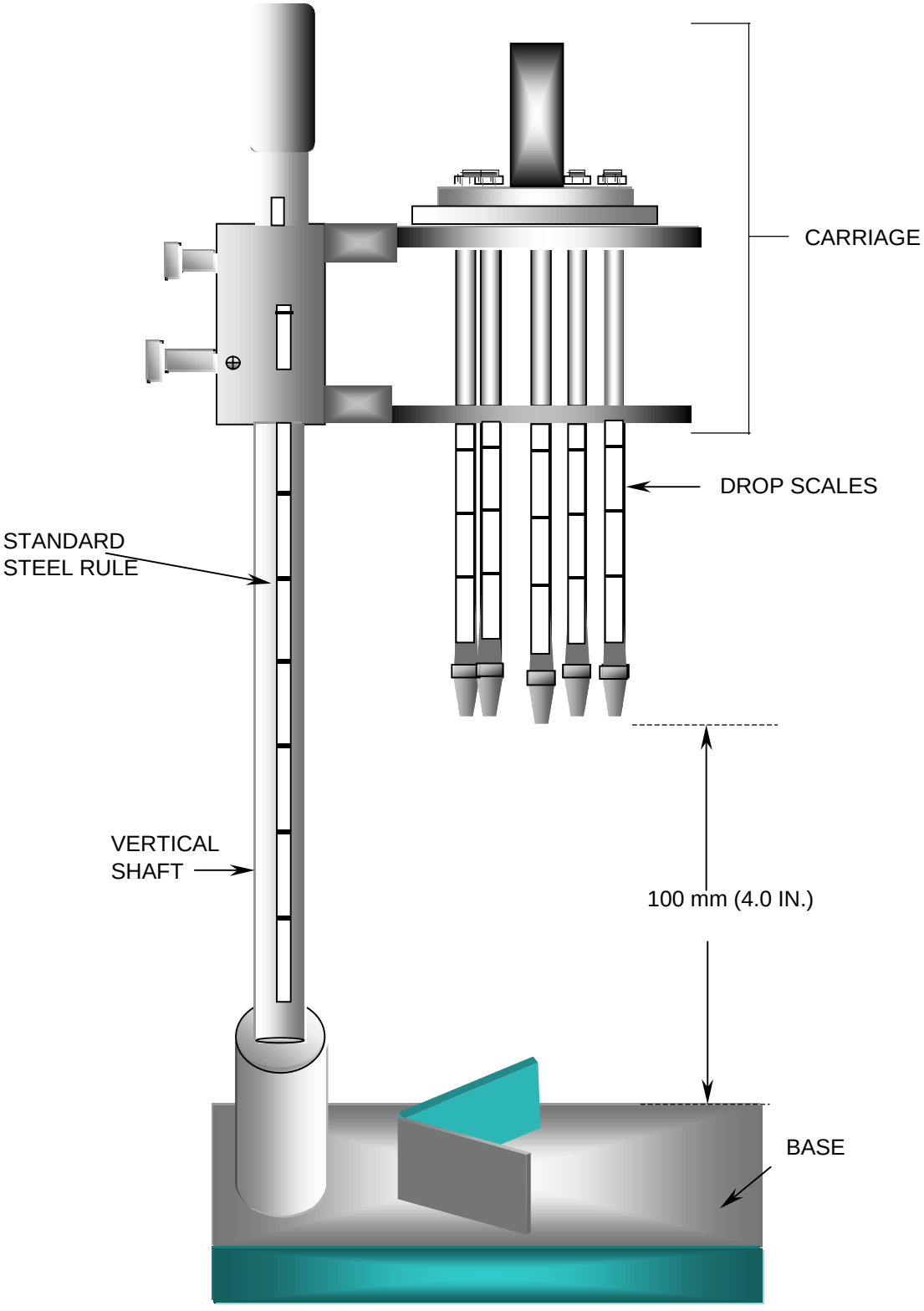
CARRIAGE
DROP SCALES
STANDARD
STEEL RULE
VERTICAL
SHAFT
100 mm (4.0 IN.)
BASE

Figure # 1

TD 244 (Rev 12-98) DIVISION OF MATERIALS AND TESTS DATE _____
CORE LENGTH

Lab No.																				
R_1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_{10}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ave.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Measured By _____ Checked By _____

Lab No.																				
R_1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R_{10}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ave.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Measured By _____ Checked By _____